

**PATENT**

U.S. Serial Application No. 10/552,588
Attorney Docket No. 960/193

Amendments to the Claims:

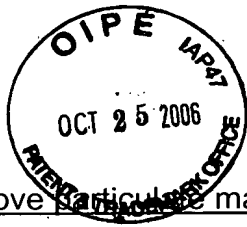
This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1. (Canceled)
2. (Currently Amended) The apparatus according to claim [[1]] 8, comprising an estimating section that estimates the amount of particulate matter in the collector based on the operating condition of the engine,
wherein the determining section determines that particulate matter in the collector has been burned and removed based on the amount of particulate matter in the collector estimated by the estimating section.
3. (Currently Amended) The apparatus according to claim [[1]] 8, comprising an exhaust purifying catalyst located in a section of the exhaust passage that is upstream of the collector, wherein the fuel supplying device supplies unburned fuel to a section of the exhaust passage that is upstream of the exhaust purifying catalyst.
4. (Currently Amended) The apparatus according to claim [[1]] 8, wherein the controlling section causes the fuel supplying device to intermittently supply unburned fuel to the exhaust passage according to a fuel supply cycle that includes a period in which supply of unburned fuel is executed and a period in which supply of unburned fuel is not executed.
5. – 7. (Canceled)
8. (Currently Amended) An exhaust purifying apparatus for an internal combustion engine, comprising:

a collector that is located in an exhaust passage of the internal combustion engine and collects particulate matter in exhaust gas;

a fuel supplying device that supplies unburned fuel to the exhaust passage to



burn and remove particulate matter collected by the collector, thereby regenerating the collector;

a determining section that determines whether particulate matter in the collector has been burned and removed;

a controlling section that causes the fuel supplying device to supply unburned fuel to the exhaust passage after the determining section determines that particulate matter in the collector has been burned and removed;

a detecting section that detects a pressure difference between the exhaust pressure in a section of the exhaust passage that is upstream of the collector and the exhaust pressure in a section of the exhaust passage that is downstream of the collector, wherein the determining section determines that particulate matter in the collector has been burned and removed based on the exhaust pressure difference detected by the detecting section; and

a comparing section that compares a predetermined value with an exhaust pressure difference that is detected by the detecting section at a point in time when the determining section determines that particulate matter in the collector has been burned and removed, wherein the controlling section switches the manner in which the fuel supplying device supplies unburned fuel to the exhaust passage according to the result of comparison by the comparing section,

~~The apparatus according to claim 6,~~ wherein, when the comparing section determines that the exhaust pressured difference is equal to or greater than a predetermined value, the controlling section causes the fuel supplying device to supply unburned fuel to the exhaust passage, the amount of which supplied unburned fuel is more than the amount required for completely burning particulate matter remaining unburned in the collector, and wherein, when the comparing section determines that the exhaust pressured difference is less than the predetermined value, the controlling section causes the fuel supplying device to supply a predetermined amount of unburned fuel to the exhaust passage regardless of the amount of particulate matter remaining unburned in the collector.

9. (Currently Amended) An exhaust purifying apparatus for an internal

combustion engine, comprising:

a collector that is located in an exhaust passage of the internal combustion engine and collects particulate matter in exhaust gas;

a fuel supplying device that supplies unburned fuel to the exhaust passage to burn and remove particulate matter collected by the collector, thereby regenerating the collector;

a determining section that determines whether particulate matter in the collector has been burned and removed;

a controlling section that causes the fuel supplying device to supply unburned fuel to the exhaust passage after the determining section determines that particulate matter in the collector has been burned and removed;

a detecting section that detects a pressure difference between the exhaust pressure in a section of the exhaust passage that is upstream of the collector and the exhaust pressure in a section of the exhaust passage that is downstream of the collector, wherein the determining section determines that particulate matter in the collector has been burned and removed based on the exhaust pressure difference detected by the detecting section; and

a comparing section that compares a predetermined value with an exhaust pressure difference that is detected by the detecting section at a point in time when the determining section determines that particulate matter in the collector has been burned and removed, wherein the controlling section switches the manner in which the fuel supplying device supplies unburned fuel to the exhaust passage according to the result of comparison by the comparing section.

The apparatus according to claim 6, wherein, when the comparing section determines that the exhaust pressured difference is equal to or greater than a predetermined value, the controlling section causes the fuel supplying device to supply unburned fuel to the exhaust passage during a period that is longer than the period required for completely burning particulate matter remaining unburned in the collector, and wherein, when the comparing section determines that the exhaust

pressured difference is less than the predetermined value, the controlling section causes the fuel supplying device to supply unburned fuel to the exhaust passage during a predetermined period regardless of the amount of particulate matter remaining unburned in the collector.

10. (Canceled)

11. (Currently Amended) An exhaust purifying apparatus for an internal combustion engine, comprising:

a collector that is located in an exhaust passage of the internal combustion engine and collects particulate matter in exhaust gas;

a fuel supplying device that supplies unburned fuel to the exhaust passage to burn and remove particulate matter collected by the collector, thereby regenerating the collector;

a determining section that determines whether particulate matter in the collector has been burned and removed;

a controlling section that causes the fuel supplying device to supply unburned fuel to the exhaust passage after the determining section determines that particulate matter in the collector has been burned and removed;

a detecting section that detects a pressure difference between the exhaust pressure in a section of the exhaust passage that is upstream of the collector and the exhaust pressure in a section of the exhaust passage that is downstream of the collector, and

a comparing section that compares a predetermined value with an exhaust pressure difference that is detected by the detecting section at a point in time when the determining section determines that particulate matter in the collector has been burned and removed, wherein the controlling section switches the manner in which the fuel supplying device supplies unburned fuel to the exhaust passage according to the result of comparison by the comparing section,

~~The apparatus according to claim 7, wherein, when the comparing section~~

determines that the exhaust pressured difference is equal to or greater than a predetermined value, the controlling section causes the fuel supplying device to supply unburned fuel to the exhaust passage, the amount of which supplied unburned fuel is more than the amount required for completely burning particulate matter remaining unburned in the collector, and wherein, when the comparing section determines that the exhaust pressured difference is less than the predetermined value, the controlling section causes the fuel supplying device to supply a predetermined amount of unburned fuel to the exhaust passage regardless of the amount of particulate matter remaining unburned in the collector.

12. (Currently Amended) An exhaust purifying apparatus for an internal combustion engine, comprising: a collector that is located in an exhaust passage of the internal combustion engine and collects particulate matter in exhaust gas;

a fuel supplying device that supplies unburned fuel to the exhaust passage to burn and remove particulate matter collected by the collector, thereby regenerating the collector;

a determining section that determines whether particulate matter in the collector has been burned and removed;

a controlling section that causes the fuel supplying device to supply unburned fuel to the exhaust passage after the determining section determines that particulate matter in the collector has been burned and removed;

a detecting section that detects a pressure difference between the exhaust pressure in a section of the exhaust passage that is upstream of the collector and the exhaust pressure in a section of the exhaust passage that is downstream of the collector, and

a comparing section that compares a predetermined value with an exhaust pressure difference that is detected by the detecting section at a point in time when the determining section determines that particulate matter in the collector has been burned and removed, wherein the controlling section switches the manner in which

the fuel supplying device supplies unburned fuel to the exhaust passage according to the result of comparison by the comparing section.

~~The apparatus according to claim 7,~~ wherein, when the comparing section determines that the exhaust pressured difference is equal to or greater than a predetermined value, the controlling section causes the fuel supplying device to supply unburned fuel to the exhaust passage during a period that is longer than the period required for completely burning particulate matter remaining unburned in the collector, and wherein, when the comparing section determines that the exhaust pressured difference is less than the predetermined value, the controlling section causes the fuel supplying device to supply unburned fuel to the exhaust passage during a predetermined period regardless of the amount of particulate matter remaining unburned in the collector.